

Working with Universities and Academia Suppliers

2006 SMA

Compliance Verification and Supplier Assurance Workshop

Honeywell Technology Solutions, Inc.

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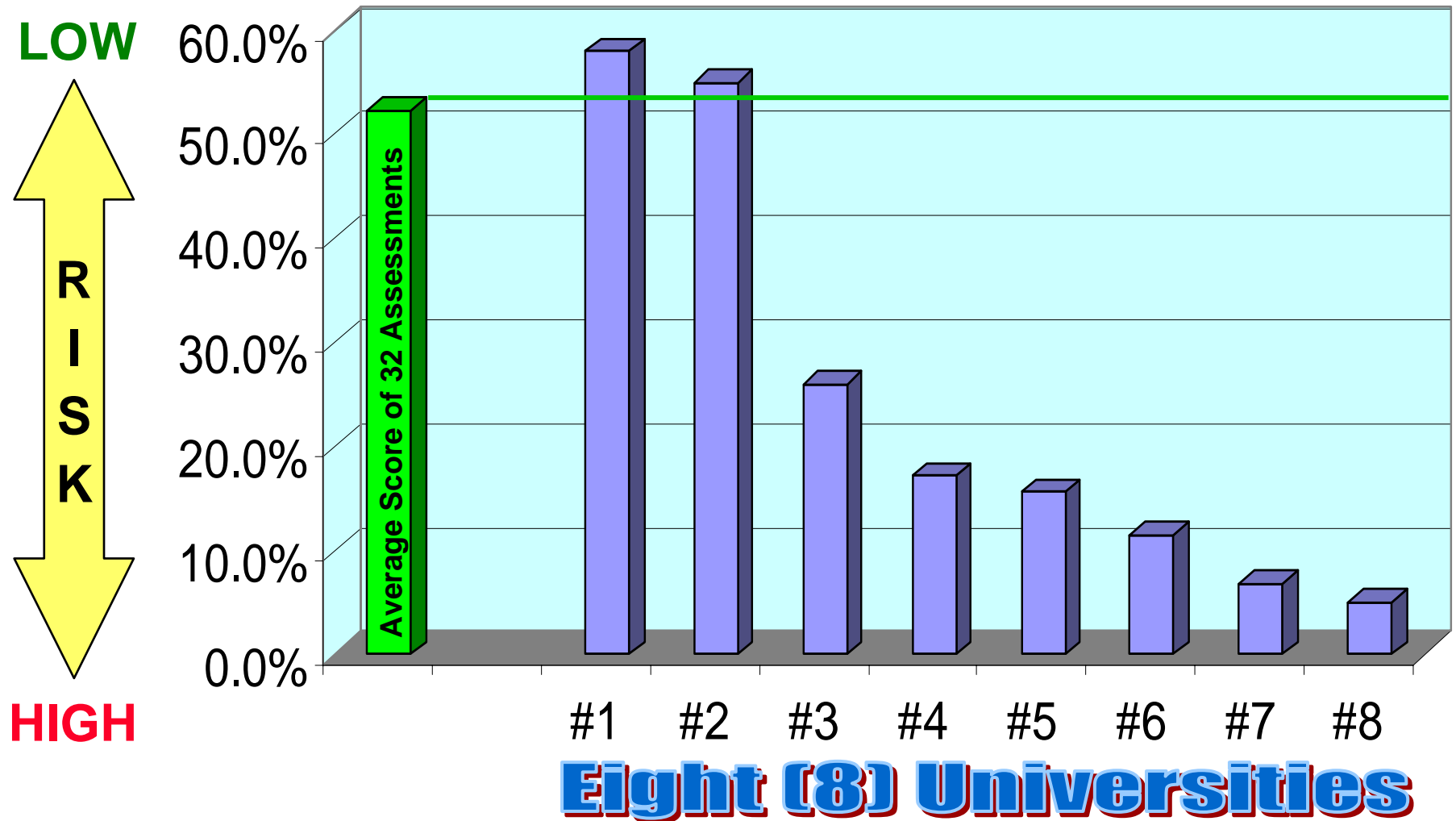
- **Data Source**
- **University Risk Assessment Scores**
- **AS9100 Paragraphs**
- **Pareto of the Quantity of Findings & Observations**
- **% of Universities Non-Compliant with AS9100 Sections**
- **Top 10 Systemic Issues at Universities**
- **Calibration – Industrial Safety – ID Req'ts – Training –
NCM – Review Req'ts – Document Control – Purchasing
– Design – Internal Audit**
- **Universities – A Difficult Environment**
- **Possible Solution**
- **Compliance Verification Information System (CVIS)**

Supplier Assurance Contract (SAC)
Now **NASA Supplier Assurance Services (NCAS)**
NASA Risk Assessments Results
From

8 Universities

University Risk Assessment Scores

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Universities have Knowledge – but lack Systems

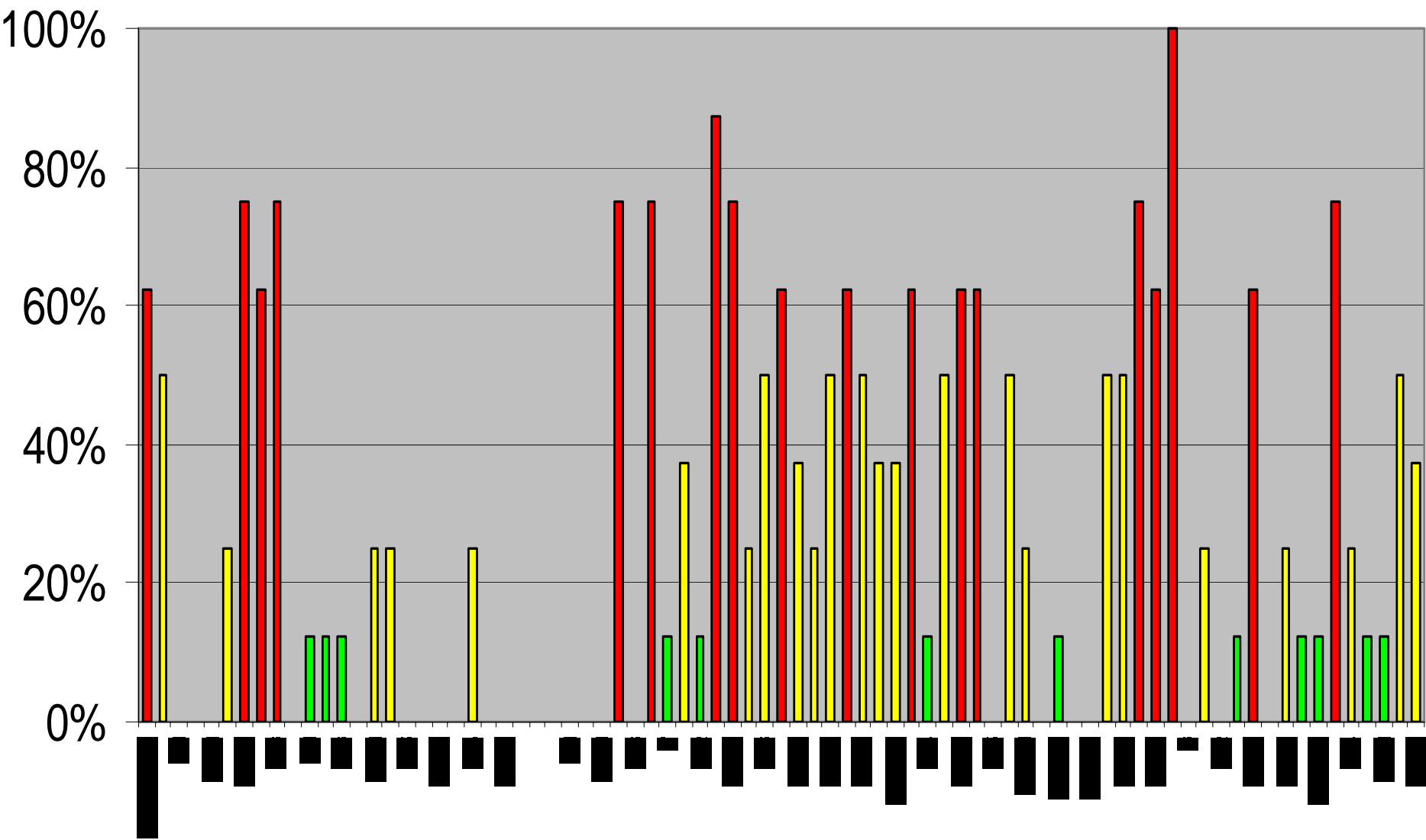
AS9100 Paragraphs

| | | | |
|------------|---|------------|--|
| 4 | Quality Management System | 7.3.3 | Design & Development Outputs |
| 4.1 | General Requirements | 7.3.4 | Design & Development Review |
| 4.2 | Documentation Requirements | 7.3.5 | Design & Development Verification |
| 4.2.1 | General | 7.3.6 | Design & Development Validation |
| 4.2.2 | Quality Manual | 7.3.6.1 | Documentation of Design and/or Development Verification and Validation |
| 4.2.3 | Control of Documents | 7.3.6.2 | Design and/or Development Verification and Validation Testing |
| 4.2.4 | Control of Records | 7.3.7 | Control of Design & Development Changes |
| 4.3 | Configuration Management | 7.4 | Purchasing |
| 5 | Management Responsibility | 7.4.1 | Purchasing Process |
| 5.1 | Management Commitment | 7.4.2 | Purchasing Information |
| 5.2 | Customer Focus | 7.4.3 | Verification of Purchased Product |
| 5.3 | Quality Policy | 7.5 | Production & Service Provision |
| 5.4 | Planning | 7.5.1 | Control of Production & Service Provision - including |
| 5.4.1 | Quality Objectives | 7.5.1.1 | Production Documentation |
| 5.4.2 | Quality Management System Planning | 7.5.1.2 | Control of production Process Changes |
| 5.5 | Responsibility, Authority & Communications | 7.5.1.3 | Control of Production Equipment, Tools and Numerical Control (N.C.) Machine Programs |
| 5.5.1 | Responsibility & Authority | 7.5.1.4 | Control of Work Transferred, on a Temporary Basis, Outside the Organization's Facilities |
| 5.5.2 | Management Representative | 7.5.1.5 | Control of Service Operations |
| 5.5.3 | Internal Communication | 7.5.2 | Validation of Processes for Production & Service Provision |
| 5.6 | Management Review | 7.5.3 | Identification & Traceability |
| 5.6.1 | General | 7.5.4 | Customer Property |
| 5.6.2 | Review Input | 7.5.5 | Preservation of Product |
| 5.6.3 | Review Output | 7.6 | Control of Monitoring & Measuring Devices |
| 6 | Resource Management | 8 | Measurement, Analysis & Improvement |
| 6.1 | Provision of Resources | 8.1 | General |
| 6.2 | Human Resources | 8.2 | Monitoring & Measurement |
| 6.2.1 | General | 8.2.1 | Customer Satisfaction |
| 6.2.2 | Competence, Awareness & Training | 8.2.2 | Internal Audit |
| 6.3 | Infrastructure | 8.2.3 | Monitoring & Measurement of Processes |
| 6.4 | Work Environment | 8.2.4 | Monitoring & Measurement of Product |
| 7 | Product Realization | 8.2.4.1 | Inspection Documentation |
| 7.1 | Planning of Product Realization | 8.2.4.2 | First Article Inspection |
| 7.2 | Customer-related Processes | 8.3 | Control of Nonconforming Product |
| 7.2.1 | Determination of Requirements Related to the Product | 8.4 | Analysis of Data |
| 7.2.2 | Review of Requirements Related to the Product | 8.5 | Improvement |
| 7.2.3 | Customer Communication | 8.5.1 | Continual Improvement |
| 7.3 | Design & Development | 8.5.2 | Corrective Action |
| 7.3.1 | Design & Development Planning | 8.5.3 | Preventive Action |
| 7.3.2 | Design & Development Inputs | | |

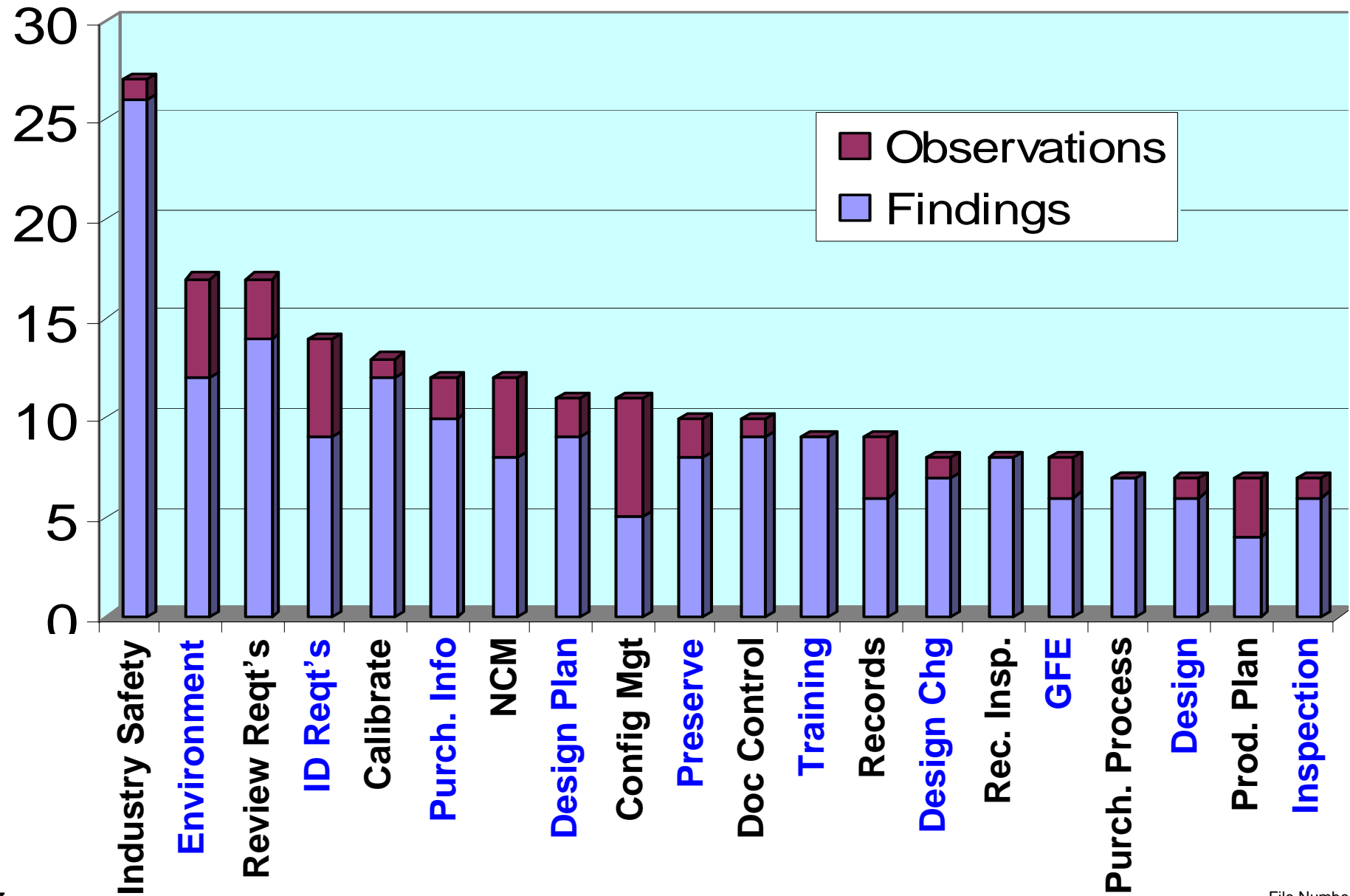
An Industry Standard Known to NASA but not Universities

% of Universities Non-Compliant with AS9100 Sections

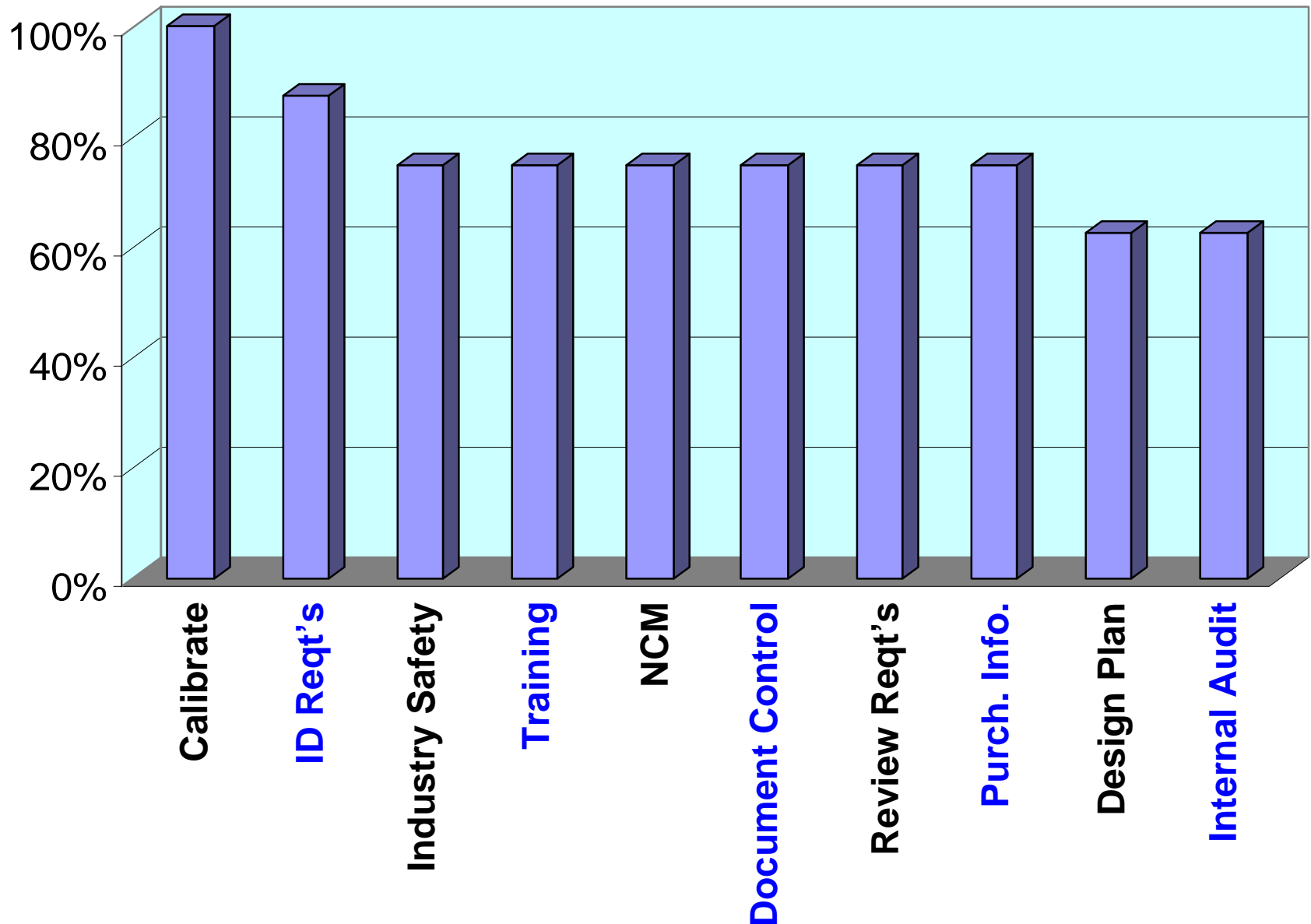
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Pareto of the Quantity of Findings & Observations



Top 10 Systemic Issues at Universities



100% of the 8 Universities with this Issue

- Chamber not calibrated to temperature range used.
- Calibration Standard Used – Mil-Std-45662A
- No Recall System
- “Limited Calibration”, but didn’t know the limit.
- Instruments with expired calibration still in use.

Require submittal of their Calibration Process

88% of the 8 Universities with this Issue

- Didn't know the Program was DPAS Rated
- University Contracts not current with 'Agreements'
- Contract Deliverables not sent to NASA
- Software Reliability not addressed in SDP
- Flex Boards used violate contract requirements.

Contractual Oversight Needed

75% of the 8 Universities with this Issue

- Hazardous substances not grounded
- MSDS Sheets not available
- Protective Gear not available for handling chemicals
- Safety Glasses not used or available
- Temporary Wiring – Floor Tiles – Machine Guards
– Flammable Material – Blood Borne Pathogen Std

Contractual Oversight Needed

75% of the 8 Universities with this Issue

- ESD Training not in accordance with Contractual Requirement
- Internally required Software Training not conducted
- Operator & Inspector not trained in Conformal Coating
- Training Records & Recertification Requirements not Available
- Instruments with expired calibration still in use.

Contractual Oversight Needed

75% of the 8 Universities with this Issue

- Material Review Dispositions missing information
- Deviation requested, approval not received, but implemented
- No Material Review Board Process
- GIDEP process doesn't require notification or action
- No Corrective Action required in Problem/Failure Reporting Process

Contractual Oversight Needed

75% of the 8 Universities with this Issue

- **Software & Data Management not sent to NASA**
- **“Draft” Configuration Mgmt, Risk Mgmt, Engineering Per Review, & Reliability Plan in use.**
- **No Process for Document or Engineering Drawing Control**
- **Records not maintained**

Contractual Oversight Needed

75% of the 8 Universities with this Issue

- **Requirements not flowed down to suppliers**
- **Contractual Software Requirements changed without approval**
- **Contractual Specifications not available.**
- **Contracts not aware of Document Delivery Dates**
- **No System Safety, Reliability, or Risk Mgmt Process**
- **Performance Assurance Implementation Plan submitted 7 months late**

Contractual Oversight Needed

75% of the 8 Universities with this Issue

- DPAS Rating not included on Purchase Orders
- No evaluation of a suppliers ability to meet requirements
- Requirements not flowed down to Major Subcontractors
- No process to ensure requirements are on PO's

Contractual Oversight Needed

63% of the 8 Universities with this Issue

- Software development process not following any Mil, ISO, AS, or CMM process
- Software Development Policy issued in 2002 used a standard that was cancelled in 1998.
- No document for planning, review, verification, or validation of product requirements.

Contractual Oversight Needed

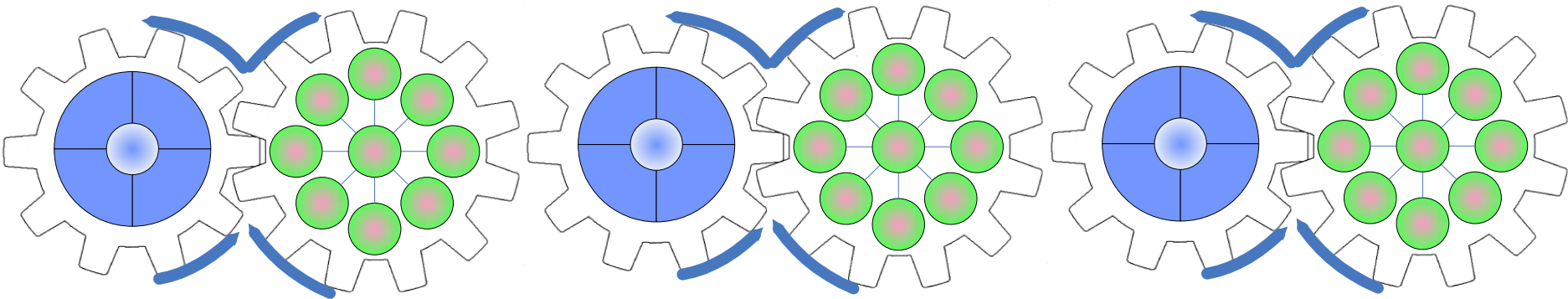
63% of the 8 Universities with this Issue

- **No Internal Audit program in place**
- **No Internal Audits conducted as specifically required by contract**
- **Audits conducted, but no records**

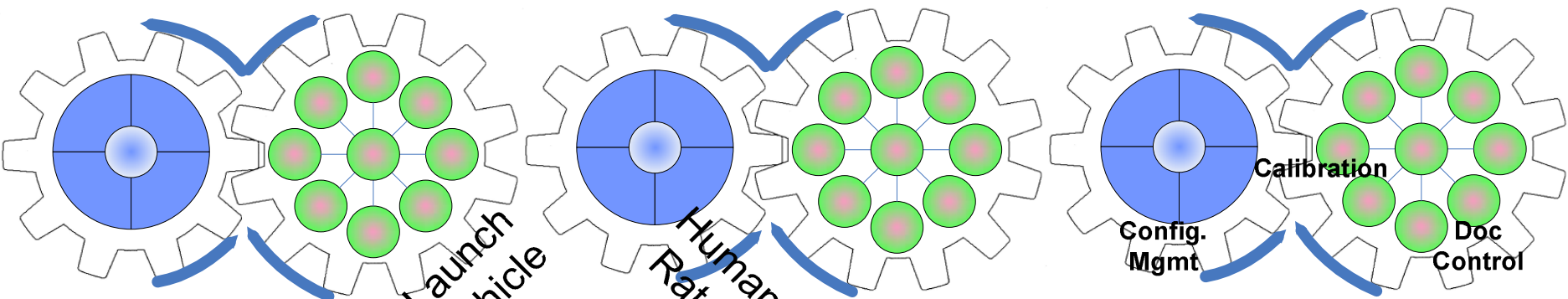
Contractual Oversight Needed

Universities – A Difficult Environment

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UNIVERSITIES



Islands of Expertise without Structure

Programs
Projects

Production

Infrastructure

Req'ts

Group
Staff
Payload
Segment

Encourage Universities to establish a Central Mission Assurance Group in support of Programs & Projects

Come along side the Principle Inspector to:

- Ensure Contract Deliverables are on Schedule
- Monitor / Audit Infrastructure (Configuration Mgmt, Clean Rooms, Calibration, ESD, Training, Software, Purchasing...)
- Liaison with University Contracts

Principle Inspector – Engineers
Mission Assurance Group – Ensures Compliance

NASA Headquarters is developing a program that will be capable of providing real-time metrics derived from IPS, IFO, and PA&R results as well as other audits/assessments funded by the Review and Assessment Division (RAD).

CVIS will provide Data to NASA Headquarters as well as become an Information Resource to Centers

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